Instructional Design & Learning Theories

Instructional design is the process for systematically creating effective instruction based on learner needs and requirements. Distance education scholars content that instructional design is key to developing successful distance education courses.

Pedagogy vs. Andragogy

Research about instructional design often includes discussions about pedagogical strategies. Pedagogy is "the art or practice of teaching." The application of technologies to enhance teaching and learning has been coined e-Learning pedagogy.

Instructional Design & Learning Theories

Some researchers in adult learning theory argue that pedagogy is not always appropriate for teaching adults because pedagogy focuses on the non-adult learner. Malcolm Knowles introduced the concept of andragogy, "the art and science of helping adults learn." Knowles is often referred to as the "father of adult learning theory." He argues that andragogy is a more accurate concept for teaching and learning in higher education.

Andragogy is based on the following principles:

- Adults need to be involved in the planning and evaluation of their instruction.

- Experience (including mistakes) provides the basis for learning activities.

- Adults are most interested in learning subjects that have immediate relevance to their job or personal life.

- Adult learning is problem-centered rather than content-oriented.

Knowles and other scholars suggest that faculty should play the role of the facilitator, in contrast to the traditional faculty role of lecturer. The responsibility of the faculty member should shift from the "sage on stage" to the "guide on the side" in a student-centered learning model.

Student-centered learning is a common concept used when discussing effective teaching and learning strategies. Students play an active role in the learning process in a student-centered learning environment.

Constructivism is a learning theory that promotes student-centered learning concepts. Constructivism has emerged as a dominant theoretical foundation for distance education and contemporary pedagogy by distance learning scholars.

The basic tenets of constructivism include:

- Students learn by doing rather than observing

- Learning should be meaningful and have real-world relevance

- Students should play an active role in assessment

Constructivism also values collaboration, interaction, and cooperative learning. The basic concepts of constructivism are often used as a model in distance education.

Instructional Design Principles

Educators and researchers have developed many different principles for designing effective instruction. I will outline the following three well-know principles of instructional design:

- Gagne's Nine Events of Instruction

- AAHE's Seven Principles for Good Practice in Undergraduate Education

- The American Distance Education Consortium (ADEC) Guiding Principles for Distance Teaching and Learning

Gagne's Nine Events of Instruction

Robert Gagne, a well-known researcher in the field of instructional design and training developed a nine-step process called the events of learning. Shirley Waterhouse has applied these nine steps to web-based courses.

Table 1
Web-based Pedagogical Strategies and Gagne's Nine Events of Instruction

Event	Web-based Strategy
1. Gain Attention	Effective use of graphical and multimedia elements. Effective Web-design including appropriate use of color, fonts, and text. An announcement section. A discussion of current topics. Referral to appropriate Web sites.
2. Inform Learners of Objectives	Course orientation. Course tutorial. Post course syllabus.
3. Stimulate Recall of Prior Learning	A getting started self-test to apply what you know. An electronic discussion about prior topics. An electronic discussion about prior topics.

Event	Web-based Strategy
4. Present the Content	Web-enhanced lectures, textbook activities, and other content delivery activities through Web-research, simulations, audio/video modules, and others.
5. Provide Learning Guide	Post syllabus, course notes, course assignments, and other course related documents. Facilitate discussions.
6. Elicit Feedback	Electronic student surveys, electronic discussions, electronic quizzes, and electronic office hours. Students submit work electronically.
7. Provide Feedback	Electronic discussions and electronic office hours. Respond to email in timely fashion.
8. Assess Performance	Electronic testing. Graded work is returned electronically. Student portfolios are reviewed electronically.
9. Enhance Retention and Transfer to Job	Web-research activities foster critical thinking. Team collaborations. Resolve case studies. Student Web-based portfolios. Utilize technologies common in workplace.

Seven Principles for Good Practice

The American Association of Higher Education (AAHE) first published the Seven Principles for Good Practice in Undergraduate Education in 1987. These principles have been adapted for the online environment in Table 2.

Table 2
Web-based Pedagogical Strategies and the Seven Principles for Good Practice in Undergraduate Education

Teaching Principle	Web-based Strategy
1. Encourages contact between students and faculty.	Electronic discussions with students. Electronic discussions with instructor.
2. Develops reciprocity and cooperation among students.	Electronic team projects and collaborations.
3. Uses active learning techniques.	Web research activities. Simulations and practice activities. Provide students with choices.

Table 2
continued

Teaching Principle	Web-based Strategy
4. Provides prompt feedback.	Self-testing. Instructors respond to email in a timely fashion. Instructor returns graded work promptly.
5. Emphasizes time on task.	Numerous student-centered learning activities.
6. Communicates high expectations.	Student assumes responsibility for learning.
7. Respects diverse talents and ways of learning.	Learning styles are addressed through flexible learning activities. Students apply technology skills needed in the workplace.

These principles are based on 50 years of higher education research collected by Art Chickering and Zelda Gamson. Chickering notes that "any given instructional strategy can be supported by a number of contrasting technologies (old and new), just as any given technology might support different instructional strategies."

ADEC Guiding Principles for Distance Teaching & Learning

The American Distance Education Consortium (ADEC) has developed Guiding Principles for Distance Teaching and Learning. The following 6 principles were specifically developed for web-based learning:

1. The learning experience must have a clear purposed with tightly focused outcomes and objectives.
2. The learner is actively engaged.
3. The learning environment makes appropriate use of a variety of media.
4. Learning environments must include problem-based as well as knowledge-based learning.
5. Learning experiences should support interaction and the development of communities of interest.
6. The practice of distance learning contributes to the larger social mission of education and training in a democratic society.

All of these principles have overlapping themes that should be considered when designing distance education courses.

Course Development Teams

Development teams are used to design web-based instruction and e-Learning activities in many distance education programs. The teams generally consist of curriculum developers, content experts, and instructional designers.

The University of Phoenix, the national, for-profit university, uses a unique instructional design model to create their courses. The team uses a systematic grid and a hypothetical, inexperienced, instructor named Joe to development the curriculum. The team creates or revises an entire course's curriculum in two or three days.

The team includes curriculum developers, an instructional designer, and the dean of the College of Education. Phoenix uses Bloom's Taxonomy six tiers as a guide when designing courses.

The design team creates lesson plans and syllabuses to be used by all instructors who teach courses at the University of Phoenix. The team keeps Joe, the inexperienced instructor, in mind when designing the curriculum. Instructors can add whatever they want to the curriculum as long as they meet all the objectives developed by the content team.

The same course development method is applied whether the course will be taught online or on-ground. Currently about one third of Phoenix's 125,000 students take their classes online.

Instructional design plays an important role in the development of distance and hybrid courses. Modern technologies allow online courses to integrate proven "best practices" into distance education courses. Student-centered learning, increased interaction (student-to-student, instructor to student), collaboration, immediate feedback, and attention to different learning styles, can all be effectively addressed in the online classroom.

Lesson Three Links:

> Readings Summary Slideshow
> Self-assessment quiz
> Lesson three assignments

Supplemental Online Resources:

Instructional Development for Distance Education
Effective Instructional Design

References

ADEC Guiding Principles for Distance Teaching & Learning. Last Updated: Jan. 30, 2003
<http://www.adec.edu/admin/papers/distance-teaching_principles.html>.

Alesandrini, Kathryn. "Visual Constructivism in Distance Learning." *USDLA Journal*. January 2002 <http://www.usdla.org/html/journal/JAN02_Issue/article03.html>.

Carlson, Robert. "Malcolm Knowles: Apostle of Andragogy." Text reprinted with permission from article by Robert Carlson in *Vitae Scholasticae*, 8:1 (Spring 1989). <http://www.nl.edu/ace/Resources/Knowles.html>.

Chickering, Arthur W. and Stephan Ehrmann. "Implementing the Seven Principles: Technology as Lever." *AAHE Bulletin*, Oct. 1996. Aug. 1999.
<http://www.tltgroup.org/programs/seven.html>.

Farrell, Elizabeth F. "Phoenix's Unusual Way of Crafting Courses." *The Chronicle of Higher Education*.
Feb 14, 2003 .

Kruse, Kevin. "Gagne's Nine Events of Instruction: An Introduction." 2002.
<http://www.e-learningguru.com/articles/art3_3.htm>.

Smith, M. K. "Malcolm Knowles, Informal Adult Education, Self-direction and Andragogy." *The Encyclopedia of Informal Education*. Last updated: April 05, 2002.
<http://www.infed.org/thinkers/et-knowl.htm>.

Waterhouse, Shirley. "How to Design Effective eLearning Pedagogical Strategies."
March 12, 2002. Blackboard Users Conference 2002.